

CLAIMS

1. Apparatus for supplying breathable gas to a patient, including a gas flow generator, a gas delivery circuit, a controller having data storage means, sensors monitoring values of operational parameters of the apparatus, and fault detection means including at least one relationship stored in said data storage means, said relationship relating a combination of values of at least two of said parameters as indicative of a fault condition of said apparatus, said fault detection means further including means testing said at least two said monitored operational parameter values against said stored relationships and instigating a response upon detection of a fault condition.
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2. Apparatus according to claim 1 wherein said monitored parameters include at least motor speed of the flow generator, gas flow rate and gas delivery circuit pneumatic pressure.
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3. Apparatus according to claim 1 wherein the gas delivery circuit includes a gas inlet, a gas filter, the flow generator, a patient mask and a gas delivery conduit connecting the flow generator output to the mask.
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4. Apparatus according to claim 3 wherein the gas delivery circuit is adapted for optional addition of a humidifier.
5. Apparatus according to claim 1 wherein the apparatus is adapted to provide CPAP or NIPPV treatment to the patient.
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6. Apparatus according to claim 2 wherein said stored relationship relates a combination of values of gas delivery circuit pneumatic pressure, gas flow rate and motor speed as indicative of a pneumatic impedance fault condition of said gas delivery circuit.
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7. Apparatus according to claim 6 wherein said stored relationship includes calibration data relating pneumatic impedance against said pressure and gas flow rate at a range of motor speeds.

5 8. Apparatus according to claim 7 wherein said comparing means tests the combination of monitored pressure and monitored gas flow against calibration data applicable to the monitored motor speed.

9. Apparatus according to claim 2 wherein said stored relationship relates a
10 combination of values of at least two of said parameters as indicative of a fault condition of at least one of said sensors.

10. Apparatus according to claim 9 wherein said stored relationship relates a combination of said pressure and gas flow rate as indicative of a pressure transducer
15 fault condition.

11. Apparatus according to claim 9 wherein said stored relationship relates a combination of said gas flow rate and motor speed as indicative of a flow transducer fault condition.

20 12. Apparatus according to claim 9 wherein said stored relationship relates a combination of said motor speed and output of a snore index transducer as indicative of a snore index transducer fault condition.

25 13. Apparatus according to claim 9 wherein said stored relationship relates a combination of said motor speed, pressure, gas flow rate and a monitored motor drive parameter as indicative of a motor speed transducer fault condition.

30 14.. Apparatus according to claim 13 wherein said monitored motor drive parameter is a function of motor current.

15. Apparatus according to claim 2 wherein said stored relationship relates a combination of said motor speed and a monitored motor drive parameter as indicative of a motor operation fault condition.
- 5 16. Apparatus according to claim 15 wherein said monitored motor drive parameter is a function of motor current.
- 10 17. Apparatus according to claim 1 wherein said fault detection means detects a fault diagnosis process fault condition upon simultaneous assertion of two or more mutually exclusive fault conditions.
18. Apparatus according to claim 17 wherein said fault detection means detects a breath and apnea detection process fault condition upon simultaneous assertion of both breath and apnea.
- 15 19. Apparatus according to claim 18 wherein said fault detection means further detects a breath and apnea detection process fault condition where neither breath nor apnea is asserted for a predetermined period.